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ABSTRACT

This document, which is based on information supplied by state vocational administrators from across the United States, presents information that is intended to help state policymakers make more informed decisions about vocational education funding. Different funding formulas and funding levels are presented to illustrate the approaches that different states are using to support their vocational programs. Section 1 explains the multiple purposes of vocational education, reviews factors that can contribute to higher costs for vocational education, and describes how differences in the delivery of vocational instruction can affect program quality and cost. Section 2 summarizes the results of a 50-state survey examining vocational education funding patterns across the United States. Section 3 identifies funding practices that may help inform state-level policymakers and discusses the types of information that states will likely need to collect in order to evaluate their vocational funding systems. Special attention is paid to the intended and unintended effects of state legislation regarding vocational education. The following state funding approaches are explained and compared: (1) foundation grants; (2) unit cost funding (funding by full-time equivalent student participation, instructional unit, and cost reimbursement); (3) weighted funding; and (4) performance funding. Five state funding matrices are appended. (MN)

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FINANCING VOCATIONAL EDUCATION

Sorting out the byzantine world of state funding formulas, district cost variations, and options for supporting the provision of equitable, quality vocational education in high schools

A State Policymaker's Guide

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INTRODUCTION

States have long provided financial support to public school districts to ensure all students have access to quality vocational programs. This aid is generally conditioned on the assumption that vocational education is more expensive to provide than other forms of instruction, although the actual magnitude of this added expense has yet to be conclusively documented. This lack of evidence has often afforded state policymakers considerable discretion in devising funding strategies and authorizing state resources in support of vocational education.

A national survey of state funding practices for vocational education reveals that the majority employ either unit-cost-based mechanisms, in which funding is allocated based on the number of courses offered or teachers engaged in vocational instruction, or weighted, per-pupil formulas that allocate resources based on the number of students enrolled in vocational education in each district. A few states are experimenting with performance-based funding formulas tied to student outcomes, and some—typically smaller, more rural states—do not provide any supplemental resources for vocational instruction. Predictably, the rationale for the different funding strategies and levels of support varies by state according to historical practices, legislative intent, scale of the vocational enterprise, and breadth and scope of vocational programs.

This paper is intended to offer state policymakers data that will help them make more informed decisions about vocational education funding. Based on details supplied by state vocational administrators from across the nation, this paper communicates perspectives from the field about the intended and unintended effects of state legislation on vocational education. Different funding formulas and funding levels are arrayed to provide legislators with an understanding of the approaches states are using to support vocational programs. A discussion of the multiple purposes of vocational education is also included to assist policymakers in determining what constitutes a reasonable cost for maintaining vocational programs.

This paper is organized in three sections. The first reviews factors that can contribute to higher costs for vocational instruction and describes how differences in the delivery of this instruction can affect quality and cost. The second section summarizes results of a 50-state survey conducted by MPR Associates to ascertain

vocational education funding patterns across states. The third section identifies funding practices that may help inform policy within states and discusses the types of information that states will likely need to collect to evaluate their vocational funding systems.

How Costly Is Vocational Education?

If the average cost of providing vocational education could be objectively measured, states would be better able to adjust funding to reflect the actual cost districts face in educating students. This section reviews national and state data from the school finance literature to isolate the component costs of vocational education compared with other forms of instruction. It suggests that the relative cost of hiring academic and vocational instructors is about the same; however, other costs, such as the number of teachers required to staff classrooms and the materials and equipment needed to provide instruction, are both variable and difficult to quantify based on published studies alone. Student demographics and state, regional, and local economic conditions, such as the demand for skilled labor or the price of materials, also may affect costs, as can the manner in which vocational education is organized and delivered.

Vocational Staff Salaries

Since school districts must compete against local employers when hiring staff, it is often assumed that excess demand will drive up the cost of vocational instructor salaries.[1] While variation in the education, tenure, professional development, and contractual incentives offered to vocational teachers likely contribute to salary differentials between the two groups, average base salaries for full-time vocational and academic teachers were not statistically different across the nation in 1993–94 ($35,080 and $34,762, respectively) (table 1). This indicates that, on the average, vocational teachers are no more expensive to compensate than academic instructors.

A variety of factors account for the minor earnings disparities noted between vocational and academic instructors. National data suggest that while vocational educators are relatively less likely than academic teachers to have earned advanced degrees, they are more likely to have attained greater seniority in the

[1]For the purposes of the national survey, vocational educators are those who identify their primary field of instruction as accounting, agriculture, business and marketing, health occupations, industrial arts, trade and industry, technical, home economics, or other vocational/technical education. Academic instructors were confined to four subjects areas: mathematics; science (e.g., biology, chemistry, earth science, physics); English/language arts; and social studies.

Table 1—Average base salary (in dollars) for full-time public vocational and academic secondary school teachers, by years of teaching experience: 1993–94

	Total	Vocational	Academic
Average salary	$34,820	$35,080	$34,762
Less than 3 years	24,232	24,785	24,147
4 to 9 years	27,671	27,851	27,635
10 to 19 years	33,764	33,343	33,872
20 or more years	41,754	41,389	41,837

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey: 1993–94 (School and Teacher Questionnaires).

classroom. According to 1993–94 Schools and Staffing Survey (SASS) data—the most recent study currently available—vocational teachers were as likely as academic teachers to earn a bachelor's degree (47 percent versus 48 percent), but they were more likely to hold less than a bachelor's degree (7 percent versus 0.1 percent) and less likely to hold a master's degree (40 percent versus 46 percent) than academic educators (table 2).

Vocational teachers were, in contrast, slightly more likely to have greater classroom experience than academic teachers: the average vocational teacher in 1993–94 had 16.8 years of teaching experience, compared with 16 years for academic teachers.

Vocational teachers also were more likely than academic teachers to participate in professional development activities, such as postsecondary education courses (43 percent versus 37 percent), and professional association activities (56 percent versus 49 percent). This extra training may occur because vocational instructors who are hired directly from technical fields often have little or no experience in curricular development or classroom management. This added experience and class time might be expected to contribute to increased earnings for vocational instructors.

In addition, public school districts sometimes use financial incentives to attract teachers in fields where there are shortages. These incentives can take a variety of forms, ranging from cash bonuses to step increases in salary schedules. Although the practice occurs, the 1993–94 SASS data show that only a small percentage of public school districts adopt such salary adjustments; for example, only 5 percent of districts surveyed provided step increases for teaching in fields with shortage (Henke et al. 1997).

Table 2—Percentage of full-time public vocational and academic secondary school teachers, by highest degree earned and type of professional development, and their years of teaching experience: 1993–94

	Total	Vocational	Academic
Highest degree			
Less than a bachelor's degree	1.4	7.3	0.1
Bachelor's degree	48.2	47.3	48.4
Master's degree	44.5	40.1	45.5
Other	5.9	5.2	6.0
Professional development			
Workshop or inservice	92.2	91.2	92.4
University extension or adult education	37.8	42.7	36.7
Professional association activity	50.3	56.0	49.0
Years of teaching experience	16.2	16.8	16.0
Less than 3 years	11.6	8.5	12.2
4 to 9 years	18.6	17.0	19.0
10 to 19 years	28.6	32.2	27.8
20 or more years	41.2	42.3	41.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey: 1993–94 (Teacher Questionnaire).

Many school districts also offer vocational teachers extended contracts, which provide them with supplemental pay for extra work performed during the regular school year—for example, to set up and take down lab materials or to pursue professional development. Although this practice is widespread, the SASS survey does not differentiate between extended contracts and other forms of supplemental income. As such, it is not possible to determine whether vocational educators are more likely than other instructors to benefit from these compensation packages.

Class Size

Vocational classes are often smaller than academic classes, in part because the high cost of specialized instructional equipment and the potentially higher risk associated with equipment use dictate lower student-teacher ratios. According to SASS national data, the average class size of a full-time vocational teacher in 1993–94 was 20.6 students, compared with 24.5 students in academic classrooms. The implication is that districts must employ more full-time vocational

instructors to generate a similar number of student contact hours, potentially boosting the average cost of vocational instruction by approximately 20 percent over the cost of academic courses ($1,703 versus $1,419 per student per full-time instructor).

Overall, there are fewer students enrolled in vocational than academic classes, but the average size of vocational classes likely varies by course level and program area. In 1994, almost all public high school graduates (97 percent) completed at least one vocational education course; however, according to 1998 data, only 25 percent concentrated in vocational education (Hurst and Hudson 2000).[2] Consequently, the bulk of the vocational enrollment is in introductory courses, which often emphasize less advanced skills or require less exposure to advanced instructional equipment.

Students concentrating in vocational education generally require greater instructor attention and access to more sophisticated equipment, often because they are striving to achieve industry certification. Average class sizes typically shrink as skill specificity rises, particularly in trade and industrial arts programs in which teachers must supervise students as they operate tools and machinery. Accordingly, the cost for vocational instruction within a given school or district may depend on a variety of factors, including the number of students enrolled in vocational courses, the number and type of introductory and advanced vocational courses offered, and the equipment used for instruction.

Purchase and Maintenance of Vocational Instructional Equipment

To keep programs current, school districts must continually purchase vocational equipment and materials and maintain vocational facilities. Little information on these capital costs has been published, in part because few states collect data on district expenditures by program area. Another complication is that school districts often have different sources of materials depending on the program offered. Materials may be donated by local employers, purchased periodically or through specially negotiated agreements with manufacturers, funded with federal Perkins Act dollars, or obtained through other, more creative means (such as student fund-raisers or reconditioning discarded equipment).

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[2]Vocational concentration refers to students earning 3 or more credits in a single occupationally specific program area.

In the absence of state or national data on equipment costs, it can be instructive to examine state cost data, which can provide a more complete picture of the relative cost associated with vocational delivery. Unfortunately, state finance data on individual cost components (such as teacher salaries) are generally not available, so the interpretation of aggregate state-level data must be approached with care. Also, because states vary so much in the amount of vocational education funding they provide, it is difficult to compare one state's results with another.

STATE APPROACHES TO FUNDING VOCATIONAL EDUCATION

MPR Associates conducted a national survey to help state legislators compare their vocational education funding levels and formulas for distributing resources with those of other states. The project began in July 2000 with an Internet search on state legislation, administrative codes, and state guidelines that govern vocational funding. In August 2000, MPR researchers developed a common interview protocol and began calling state finance experts within state education and/or finance departments. These interviews helped MPR staff validate state finance data, fill in missing information or gather more detail about processes, and clarify the state's intent with regard to its funding practices. In some cases, administrators were contacted several times to ensure reporting accuracy. This section summarizes the findings on strategies used to fund vocational programs, quantifies the level of support afforded by these approaches, and assesses the rationale and supporting data on which these formulas are based.

Rationale for State Funding Approaches

Conversations with state representatives revealed a range of intentions underlying state vocational funding practices. In many cases, staffers spoke of inheriting historical funding formulas that had been in place for years prior to their hire. When pressed on the reasons for their continued use, staff often mentioned the importance of maintaining stability in annual allocations and expressed a lack of interest in fiddling with a system that appeared to be working.

On the other hand, a number of states had recently adopted or were transitioning to new formulas. Changes in funding practices in these states often resulted from court rulings on equity and adequacy issues—either within vocational education or secondary education overall—or legislative mandates to reform vocational education policy. Since 1993, at least 10 states have undergone systematic changes in their state funding approaches (Education Commission of the States 1999). Shifts in state education policy also have led to changes in state funding for vocational education. For example, **Indiana** recently adopted a new vocational funding formula that is intended to promote state economic competitiveness. Under the new formula, local agencies are funded based on student

participation in specific vocational program areas, particularly those in which there is above average labor market demand. Responding to legislative pressure, **Florida** recently instituted a postsecondary performance incentive system that rewards local agencies based on the number of students who complete programs and enter the workforce.

State funding methods for vocational education fall into four broad categories: foundation grant programs, unit cost funding, weighted adjustments, and performance-based outcomes. It is not always easy, however, to label individual state approaches. In many cases, states may combine two or more strategies, such as basing funding on the number of vocational full-time-equivalent students but adding in a stipend for equipment or administration of the programs. In addition, states deliver vocational education in different settings, including high schools devoted to vocational education, programs within comprehensive high schools, and regional centers that serve several high schools, often in two or more districts. Whether a state has multiple vocational delivery systems and whether these systems are funded using similar allocation criteria also complicate classification attempts. To simplify analysis for the purposes of this study, state funding systems are classified based on the practice used to distribute a majority of state vocational funds. Analysis places greater emphasis on quantifying the level of vocational funding and its relationship to other forms of instruction than on detailing the multitude of channels by which vocational funds may be disbursed. A matrix in each section helps illustrate state funding approaches.

Category I: Foundation Grants

State foundation grant programs are intended to ensure that all students in a state receive a minimum level of basic education services. Each year, the state establishes a threshold spending level for each student, often expressed in full-time-equivalent (FTE) or Average Daily Membership (ADM) units. This level is then adjusted to account for district attributes, which may include local wealth or taxing capacity, school size and urbanicity, and/or student characteristics or special needs. Districts receive an allocation according to the number of students they enroll and have some level of flexibility in how to spend this money. Twenty percent of states—**Arkansas**, **Nebraska**, **Nevada**, **New Hampshire**, **New Jersey**, **New Mexico**, **Oregon**, **South Dakota**, **Wisconsin**, and **Wyoming**—do not budget supplemental funding for vocational education in addition to their state foundation grant program. Instead, districts opting to offer vocational programs must fund them out of their state foundation grant, with their share of

federal Perkins Act dollars that flow from the state, and/or with local contributions.

Although these 10 states do not earmark additional funding for vocational education, it is likely that most, if not all, indirectly consider the cost of providing vocational education when they determine foundation funding levels. Given that school districts in each of these states have historically provided students with access to vocational services, in some cases through area vocational high schools, it is clear that the absence of supplemental funding has not eradicated vocational instruction. It could be that the size of state foundation grants is sufficient to support vocational instruction, local agencies have found other sources to fund vocational programs, or the type of vocational instruction and manner of delivery conform to available funding.

Some states have developed foundation grant formulas that implicitly account for the average cost of providing vocational instruction within the state. To establish state funding levels, **Wyoming** has adopted a cost-based grant model that takes into account approximately 25 instructional and operational cost components, including the average statewide cost of providing vocational education. Consequently, in the aggregate, the basic block grant under the new system is believed to be sufficient to pay for the amount and quality of vocational education offered before the state school finance system changed.

Recognizing that vocational students may be required to travel to other sites to receive services, some states have given local agencies leeway in how they calculate vocational FTE students. **Nevada**, for example, allows local districts to count students who are involved in cooperative work agreements even if they spend as much as one-third of their day off campus. Moreover, states that operate stand-alone area vocational schools, such as **Arkansas**, provide a small amount of money for equipment and program start-up to qualified schools that apply.

A review of state foundation spending (see table 3) suggests that some states, including **New Jersey**, **New Hampshire**, and **Wyoming**, provide a relatively high level of support for all students, vocational included. In fact, unadjusted state funding in **New Jersey** for students ($7,913) exceeds funding provided for vocational students participating in traditional program areas in most states.

Table 3—Unadjusted base expenditures per ADA student in states not providing supplemental funding for vocational education, by state: 2000–01

Arkansas	$4,492	New Mexico	$2,632
Nebraska	$4,606	Oregon	$4,440
Nevada	$5,614	South Dakota	$3,666
New Hampshire	$6,622	Wisconsin	$4,756
New Jersey	$7,913	Wyoming	$6,405

SOURCE: MPR Associates, Inc.

Direct comparisons of state foundation funding levels do not necessarily provide sufficient information to determine whether a given local agency gets adequate funding for vocational services. A variety of state and local factors, such as the cost of providing services and the type, scope, and specificity of vocational curricula can affect the relative cost of providing vocational instruction, rendering useless any interstate comparison of total per-student expenditures. It is perhaps reasonable to conclude that states that have considered the costs of vocational education when setting their foundation grant levels are more likely to provide support than those that do not, and that this, in turn, may affect local decisions to offer vocational coursework.

While this study did not attempt to contrast the type of vocational coursework or curricula offered across states, it may be that failing to provide additional funds for vocational education may lead local agencies to avoid certain types of instruction. For example, if capital-intensive, occupationally specific instruction is relatively more expensive to provide than introductory survey coursework, state and local agencies may be more likely to offer more general instruction. Alternatively, districts may have an incentive to reduce all vocational services if the amount of state funding is not sufficient, in combination with other resources, to cover costs. Staff from **South Dakota**, which recently dropped all supplemental funding for vocational education, told MPR researchers that local school districts are having an increasingly difficult time subsidizing vocational education.

Category II: Unit Cost Funding

As part of their annual appropriations, state legislators in a number of states routinely budget resources in support of vocational education. The amounts vary widely across states depending on several factors, including state economic con-

ditions, the number of students participating in vocational programs, the number and type of local agencies offering services, historical funding precedent, and the relationship of vocational education to other legislative priorities. Although these annual allocations may run into the hundreds of millions of dollars, state funding usually covers only a fraction of total spending on vocational instruction.

To allocate funding to local education agencies, state administrators design funding formulas that take into account a variety of district characteristics. Most base these decisions on the level of student participation in vocational education, the number of teachers required to provide instruction, or the overall costs incurred in providing vocational services. As might be expected, given the rash of lawsuits over school finance, states often include some form of fiscal equalization factor in their formula to control for district wealth. Other factors used to adjust state allocations to local agencies include program type, length of training, size of the institution, student outcomes, and student participation in vocational organizations, such as VICA or FFA. A number of states, typically those that concentrate funding in area vocational schools, also budget additional resources to support administration and facility construction, purchase, or lease.

Funding by FTE Student Participation

Fifteen states condition the size of district allocations, in part or whole, on enrollment. For example, a district that enrolls 5 percent of the state's FTE vocational students would be eligible to receive 5 percent of the state funds allocated for vocational education. The states that allocate a majority of their vocational funding based on student participation levels are **Arizona, California, Connecticut, Hawaii, Maryland, Massachusetts, Minnesota, Montana, New York, North Carolina, Rhode Island, Utah, Vermont, Washington,** and **West Virginia.**[3] The specific funding mechanism varies within states, however (see Matrix 1 in the appendix).

To consolidate state resources, a number of states, including **California, Connecticut, New York, Rhode Island,** and **Vermont** earmark state funding for area vocational centers. **California** provides a fairly good example of the method most states use: funding is distributed to 82 Regional Occupational Center Programs based on the centers' average daily attendance (adjusted for center size

[3]Arizona considers both student participation levels and vocational student weights in its formula to distribute funding, and the majority of districts receive funding based on student participation. Weights are applied only to students who participate in one of the state's two joint vocational education districts, which serve roughly 12 of the state's 231 districts.

and revenue limits). To adjust for district wealth, **New York** lets its area centers choose whether to submit either enrollment data or its millage ratio, which is based on the tax rate of sending districts. Not all states that fund centers correct for district wealth: **Connecticut** allocates 75 percent of funding based on the number of programs and students enrolled and 25 percent based on school square footage, and **Vermont** awards $500 per student enrolled in an area center, based on the previous year's enrollment.

The remaining 10 states fund vocational instruction regardless of whether it is offered in a comprehensive high school or area vocational center. In most cases, states have devised unique funding formulas that, though based on vocational FTE student enrollment, incorporate other factors. **Arizona** has developed one of the more complex formulas: a block grant accounts for roughly 83 percent of state vocational funds. Ninety percent of the grant is allocated based on 11th- and 12th-grade vocational enrollment and 10 percent on the number of students who are placed in employment. Moreover, vocational enrollments are adjusted by class length and weighted by program area, with higher priority programs—those preparing students for high-demand, high-wage occupations—given greater weight. The remaining 17 percent of vocational education funding in Arizona is earmarked for administrative costs. The distribution formula is less complicated in other states: for example, each LEA in **North Carolina** is eligible for a base grant of $10,000. Any remaining state funds are allocated based on student ADM in grades 7–12.

Other states use unique cost formulas that consider individual factors (for example, teacher salaries), summed by program area, to generate an overall cost of educating students. **Massachusetts** has one of the more intricate formulas. It calculates average expenditures for at least 19 factors, including salaries, benefits, professional development, physical plant, and equipment and supplies, for 12 different student categories, of which vocational education is one. State data for the 2000–01 school year suggest that vocational education is 56 percent more expensive to provide than a general high school education. So, on average, high school districts in **Massachusetts** will receive $5,449 for each "academic" student versus $8,549 for each FTE vocational student.

In **Washington**, local agencies are awarded $3,653 for each high school FTE student enrolled in academic coursework and $4,316 for each vocational FTE student. Only districts that cap their staff-to-student ratios at 1:19.5 and spend no more than 10 percent of their vocational budget on indirect costs (such as materials and supplies) can receive state funding. Using data from earlier years, the state has calculated that average local vocational expenditures exceeded those for

basic education by $758, an amount that is somewhat more than the actual average state allocation of $663.40 awarded by the state to cover the supplemental cost.

Allocating resources based on the level of student participation in local agencies seems a reasonably good way to concentrate funding in areas of greatest demand. Moreover, when it is adjusted for district and other local characteristics, this funding approach can provide some assurance that each local agency receives its fair share of state resources. It is not clear, however, that all districts will receive the minimum resources necessary to provide an adequate program of vocational services, even if the total state allocation for vocational education is sufficient. If there is a fixed cost associated with offering particular types of vocational programs, or in maintaining services across a number of program areas, then smaller districts or those with more capital-intensive programs may be unable to support services.

Funding by Instructional Unit

Alabama, **Delaware**, **Kentucky**, **Mississippi**, **Tennessee**, and **Virginia** (see Matrix 2 in the appendix) base vocational funding on "instructional units," or the total number of students participating in vocational education (often calculated on an FTE or ADM basis) divided by an average vocational class size (fixed by the state).

Sometimes class sizes vary for vocational and academic instruction. In **Tennessee**, for example, a district earns funding for a teacher's salary and expenses for each 26 general high school students and for each 20 vocational students enrolled. Rather than rely on a single average class size to calculate instructional units for vocational programs, **Virginia** has specified differing student-to-teacher ratios—ranging from 15:1 to 21:1—for differing vocational programs. Each vocational program unit is funded at a constant teacher salary amount of $37,262 per year plus 15 percent for benefits; urban districts receive a 10 percent cost-of-living adjustment.

One advantage of instructor-based funding is that states have some flexibility in establishing the amount of supplemental funding local agencies may receive for vocational coursework. Specifically, states that adjust instructional units by vocational program area may be better able to direct resources toward those programs that are most expensive to provide. By using smaller student bases for higher-cost program areas, school districts can generate additional funding eligibilities for different programs enrolling the same number of students. This can provide

local agencies with an incentive to offer relatively more expensive programs, such as machine tools or automotive technologies, which an average cost approach might not otherwise cover. Alternatively, districts can choose to offer smaller class sizes in high-cost, capital-intensive vocational program areas.

In **Delaware**, vocational instructional units are treated as add-on funding—districts generate one instructional unit for every 20 students, regardless of program area, and one-half unit for every 27,000 vocational pupil minutes per week. **Mississippi**, in contrast, calculates instructional units for vocational and academic students by dividing student FTE by an average class size of 27. An additional one-half teacher unit is then added for each approved vocational program, with funding based on certification and experience of an approved teacher.

Rather than link instructional funding to vocational student enrollments, **Kentucky** has adopted a unique formula in which school districts that operate an area center or vocational department receive $21,000 per teacher for up to five vocational instructors, $15,000 per teacher for between six and nine instructors, and $10,000 per teacher for 10 or more instructors. The state operates 52 centers that receive a direct line item appropriation in the budget as well as per-pupil funding in accordance with the basic school formula.

Funding by Cost Reimbursement

Colorado, **Idaho**, **Iowa**, **Maine**, **Michigan**, **North Dakota**, **Oklahoma**, and **Pennsylvania** reimburse districts for all or a percentage of costs associated with providing selected vocational services (see Matrix 3 in the appendix). Each year, districts report their actual costs for vocational education programs and services, often categorizing these expenditures by purpose. States typically appropriate funding for vocational education based on prior year allocations and trends, adjusting year to year to reflect changes in state resources and district expenditures.

Some states, such as **Maine**, fully reimburse districts for all vocational costs that exceed the state foundation formula. District costs are reimbursed on a two-year lagged cycle, based on a formula that controls for district property values and student enrollment. One drawback with this approach is that, since district expenditures are premised on full state reimbursement, fiscal shortfalls can reduce state capacity to reimburse districts, meaning that some portion of local costs will go unfunded. The consequences can be severe for districts that face budget deficits when anticipated state resources fail to materialize. A second problem with full-cost reimbursement is that the approach does not encourage efficiency. One state representative pointed out that districts are actually encouraged to

spend more under full-cost reimbursement, since in theory all costs will be compensated.

Some states compromise by reimbursing a percentage of district costs or a subset of program expense categories. For example, **North Dakota** reimburses districts that provide secondary occupational programs for 26 percent of the cost of instructional salaries and extended contracts and 31 percent of approved travel. Area Vocational and Technology Centers receive 39 percent of all approved costs. Similarly, districts in **Iowa** are eligible for partial reimbursement of teacher salaries, benefits, and travel. As in **North Dakota**, state funding in **Iowa** covers only a percentage of total local expenditures: for the 2000–01 school year, it is estimated that roughly 8 percent of actual vocational costs will be reimbursed by the state. While **Idaho** also offers cost reimbursement, each of 43 vocational program areas has a funding cap: for example, $15,390 per unit for machining technologist programs and $5,130 per unit for marketing education.

In practice, state funding is seldom sufficient to cover all of the costs associated with vocational education. For example, in **Colorado**, state funding is available only if a school district's vocational program costs exceed 70 percent of the per-pupil funding otherwise available to it. It works a little like some insurance policies. Specifically, the state covers 80 percent of the first $1,250 of excess costs and 50 percent of expenditures over that amount. In 2000–01, the vocational program expenses of Colorado districts will equal roughly $63.5 million, of which roughly $19 million will be eligible for state reimbursement. Available state funding will cover about 93 percent of the $19 million, and districts must pay for the remaining expenses through other local sources.

Oklahoma has taken a unique approach to funding districts in that the state has defined quality criteria and associated costs for vocational services offered in comprehensive high schools and Area Technology Centers. Within comprehensive high schools, each district receives $200 per contract month for each vocational teacher. This money is used to support student organizations and professional development activities. Additionally, the state provides grants ranging from $560 to $8,280, depending upon vocational program area, to compensate for equipment, supplies, and staff development training. Area Technology Centers in Oklahoma follow the state's Quality Foundation Formula, which stipulates the standard of instruction for all students and the cost of meeting these standards ($118,359 per FTE program in 2000–01). Knowing in advance the amount of funding for which they will be eligible helps local agencies set the level of vocational education they wish to offer and balance a mix of services that match student and community tastes. The downside of cost reimbursement

is that it can expose the state to some level of uncertainty in budgeting for vocational expenditures, since it may be difficult to predict changes in local spending. States also may require greater oversight of local spending to ensure that vocational costs are classified appropriately.

Category III: Weighted Funding

Weighted cost factors are used in state funding formulas to concentrate funding on vocational education. Weights function by mathematically inflating the number of FTE students participating in a vocational course or program area, thereby increasing an agency's resource eligibility. States that use this approach include **Alaska**, **Florida**, **Georgia**, **Illinois**, **Indiana**, **Kansas**, **Louisiana**, **Ohio**, **South Carolina**, and **Texas** (see Matrix 4 in the appendix).

The typical formula involves either *add-on weights* or *vocational student weights*. A state using an add-on weight would multiply its base foundation level of funding allocated for all students by a fractional number for each student participating in vocational programs. In contrast, a state employing a vocational student weight would simply specify different weights for students participating in vocational and non-vocational programs. While the two forms of weighting are subtly different, the effect is the same: youth enrolling in approved vocational programs qualify for more funding than those in other instructional areas.

Texas provides perhaps the clearest illustration of how vocational weighting formulas can operate. Within Texas, each FTE student in Career and Technology Education—defined as 1,080 contact hours a year—generates a weight of 1.37. To calculate the amount of funding local agencies are eligible to receive, total student contact hours are multiplied by three factors: 0.95, the adjustment for student absences; $2,537, the adjusted state basic allotment; and 1.37, the vocational student weight. The basic allotment may be adjusted per district to account for geographic variation in known resource costs and to ensure equity for small and mid-sized districts. **South Carolina** employs a similar formula, with the exception that each FTE student in vocational education generates a weight of 1.29, compared with 1.25 for other high school students. In **Florida**, this weight is 1.211 for vocational students.

Each vocational student in **Kansas** gets an add-on weight of 0.5. In **Ohio** the add-on is 0.6, in **Louisiana** 0.05, and **Illinois** 0.3, for specific programs. **Indiana** has developed a complex system of add-on weighting that differentially funds vocational programs based on their cost. For example, relatively more expensive programs, such as business education laboratory courses, are assigned an add-on

cost of 0.33, compared with 0.19 for agriculture courses that meet one period per day. The state plans to phase out this approach in the 2002–03 school year, however, when it will adopt a student performance incentive model.

Comparisons between states are most useful when they focus on the relative weight a state assigns to vocational students rather than on actual dollar amounts. State foundation levels vary widely across states, in part because of differences in state economic conditions and in part because of higher education costs in some areas. Furthermore, district eligibilities are often adjusted before the calculation of vocational funding levels to account for local characteristics, so comparisons of state foundation floors may be misleading. Matrix 4 compares state weights for vocational education with state foundation funding levels for all students. Approximate funding levels per FTE student participating in vocational education and regular high school instruction may be estimated from the weighted factors provided in the matrix. Assuming that the distribution of vocational students is roughly equal to those who participate in non-vocational programs, it would appear that, on average, states using weighted formulas allocate roughly 27 percent more funding for vocational education than other forms of instruction.

Category IV: Performance Funding

Two states—**Indiana** and **Missouri**—condition all or a portion of their annual funding for vocational education on student participation in specific program areas and/or performance outcomes. This emphasis on student outcomes can be traced to a number of factors, including a desire on the part of state legislators to promote economic development and to make local agencies accountable for student results on some level. While only two states presently engage in this funding approach, a number of others in the national survey indicated an interest in making the switch (see Matrix 5 in the appendix).

Since 1974, **Indiana** has funded vocational education using a system of program-specific, added-cost weights. Relatively higher-cost programs, such as Trade and Industry, are given more weight than less capital-intensive programs, such as Consumer and Homemaker education (0.48 versus 0.14). Beginning in the 2002–03 school year, the state will implement a new, outcome-based system. Districts will earn $550 for each student who receives a certificate of achievement in a technical field, $1,000 for each student in programs linked to high-demand employment or labor market fields, $700 for each student in moderate-demand fields, $300 for each student in less-than-moderate-demand fields, and $230 for each student enrolled in apprenticeship programs. Although the for-

mula appears to represent a dramatic change in state funding, the amounts allocated for each outcome, as well as the outcomes themselves, are intended to keep overall district funding relatively constant.

In contrast, **Missouri** uses a state instructional salary reimbursement formula that bases funding to area vocational schools and comprehensive high schools on a combination of the number of teachers employed and the performance of each agency. For example, comprehensive high schools are eligible for a funding base of $300 per contract month for each full-time, certificated vocational education teacher, and $35 per class period for part-time teachers. Incentive funding is then awarded conditioned on the relative success of the agency in placing students in jobs and the responsiveness of a particular program to labor market supply and demand factors. Values for each component are added together to obtain an Effectiveness Index score that is used to determine agency eligibility for state funds appropriated for incentive funding. State resources are also available for the purchase of instructional equipment through state enhancement grants (covering 75 percent) and annual equipment funding (covering 50 percent) of the cost of new equipment.

While there are often compelling reasons to reward districts for positive outcomes, ensuring that the competition is fair and that the results reinforce the provision of high-quality vocational education should be the highest priority. For example, a state adopting a performance-based formula that rewards programs in high demand labor market areas or those with high placement rates should consider earmarking funds for districts seeking to change their program offerings. Otherwise, districts that do not quality for incentive funding may find it difficult to ever generate sufficient resources that will allow them to implement relatively higher-quality instructional programs.

Moreover, unless state incentive systems adjust for district size, basing funding on student outcomes may unfairly reward larger, more urban districts, even if they engage in relatively low-quality instruction. Given the greater availability of jobs in metropolitan areas, as well as the larger number of potential completers, the location or scale of the enterprise may contribute more to outcomes than the instruction itself. Economies of scale also may give larger agencies an unfair advantage in either purchasing equipment or offering different types of vocational programs. Unless states take steps to audit local agencies, educators may have some incentive to emphasize completion at the expense of program content.

Finally, the philosophical question is whether funding performance outcomes will support the central mission of vocational education. Do incentive systems

penalize districts whose vocational programs stress academic and cognitive skills and whose aim is preparing students for college rather than employment immediately after high school? While the **Missouri** system awards similar points for students who find employment or who enroll in continuing education, a higher weight is applied to students who pursue related postsecondary education than for those in unrelated education, which could include pursuit of a baccalaureate-level degree.

A second question is whether performance-incentive systems introduce accountability into vocational funding formulas at the expense of choice or equality. Districts responding to fiscal pressures may have more incentive to expand relatively higher revenue-generating programs at the expense of less lucrative programs that have greater student interest. At present, it is difficult to assess the long-term effects of performance-based funding on vocational programs. With the exception of **Missouri**, which expanded funding incentives to include all schools in 1994, there is little evidence to either recommend or reject these systems.

Reflections on State Funding Practices for Vocational Education

Although the overall operation and purpose of vocational education is remarkably similar across the country, it is funded quite differently from state to state. The challenge for states, then, is to clarify what constitutes a reasonable level of spending for vocational education. To assess the return on investment accurately, states will need to collect and analyze data that quantifies the costs and benefits of vocational education.

Variability in Local Programs

Given that state supplemental funding for vocational education is often allocated per FTE student, based on the average cost of all vocational programs within an instructional category, it is possible that some school districts will not receive sufficient funding to offer certain types of vocational programs. If there is a minimum cost threshold associated with providing certain types of vocational instruction, it may be that, on average, the enrollment of smaller districts is not sufficient to ensure a minimum level of instructional quality. States can address this problem by including an explicit adjustment factor in the vocational formula, as **Texas** has done, to ensure that small and mid-sized districts are not penalized. Or they could follow the lead of **Oklahoma** and adopt statewide quality standards and procedures that local agencies must follow to ensure that all agencies provide a comparable level of vocational service.

Whether vocational education is delivered in stand-alone vocational high schools, comprehensive high schools, or in regional centers that serve a number of schools also may affect its cost. For example, area vocational schools, by virtue of their size, teacher expertise, student skill level, or concentration of students, may be able to accommodate relatively larger numbers of students in classes than comprehensive high schools, which can result in instructional cost savings. Conversely, comprehensive high schools may realize substantial savings in transportation costs, since students may attend all courses on site.

If a state uses a weighted funding formula for vocational education, it may wish to assess whether the type of vocational program offered affects instructional

costs. Several states, including **Idaho**, **Indiana**, **Michigan**, and **Oklahoma**, allot additional funding for more expensive programs. This approach can encourage local agencies to offer higher-cost vocational services than they might otherwise support and give states more influence over local instruction. On the other hand states must guard against the possibility that districts might try to "game" the system for their own benefit. For instance, the quality or scope of vocational programs could suffer if school districts attempted to maximize funding by funneling students into relatively high-cost vocational programs.

Funding districts at a flat rate per FTE student without attaching any requirements for how the money should be spent may or may not affect vocational education. Such an approach could enable districts to spend even more on vocational education and/or offer a higher level of academic services. Some districts could choose to offer a full complement of vocational programs while others offered very few. Is this unfair? The answer depends, in part, on the reasons for the differences in the relative amounts of vocational education offered among districts.

First, the decision may simply be a local choice that reflects student, parental, or community preferences for vocational versus academic education. The tradition of local control gives communities substantial discretion over the kind of education offered. Other things being equal, districts may choose to pay above-average salaries for their teachers and offset this added expense with higher class size. They can buy more expensive textbooks and replace them less frequently. If local preference is the cause of the variation, there is no apparent rationale for accommodating these different preferences through the state's school finance system.

Second, the differences may reflect district variation in the distribution of K–12 students. Since vocational education is largely a secondary school program, K–12 districts with above-average concentrations of high school students will have above-average requirements for vocational education. Over time, of course, these variations in age distributions should even out as the various demographic bulges work their way through the local school system. However, school district finances are not structured to allow accumulations of surpluses in years of "low-cost" demographics to later tap in high-cost years. If student distribution is the reason for district variation in vocational education spending, there may be justification for a state to address the issue through its education funding formula.

Perceived need can be a third reason for the differences in district spending. Traditionally, vocational education has been designed for high school students who

are less likely to pursue a four-year postsecondary education. If relatively higher doses of vocational education are appropriate for these students, and if it is possible to identify them accurately and fairly, then states may want to consider enabling local districts to use this strategy. After all, similar reasons justify additional compensation for the higher costs associated with serving students who "need" other types of special education. Since the percentage of students able to pursue a four-year college degree probably does vary considerably among districts, the state's funding formula could address this issue as it does for district size or the proportion of special education students.[4]

There are, however, potential problems with this third explanation that merit careful consideration. First, the long-standing presumption that vocational education is suited mainly for students who do not intend to go to four-year college is less widely held today. Labeling any educational program as intended primarily for "non-college-bound" students relegates it to second-class status that can stigmatize both students and teachers. Additionally, such a policy tends to promote "tracking" and the low expectations that seem to follow students assigned to the lower path. These practices are at odds with many of the current efforts to break down the barriers between vocational and academic education and to raise the knowledge and skill levels expected of all students.

Furthermore, even if vocational education were the preferred mode of instruction for non-college-bound students, it is not easy to determine ahead of time (that is, no later than the end of 10th grade) precisely who will not go to four-year college. The fact is that about 90 percent of all high school students *aspire* to attend four-year college. Although as many as 60 percent of high school students will not achieve this goal, most parents will not accept such a determination for their own children so early.

Finally, there is the complicated matter of distinguishing "need" for vocational education from mere preference. Even if there were consensus that the state finance system should address differences in need for vocational education among districts, how would the state distinguish the students who "need" an automotive or cosmetology program to pursue employment after high school from the students who just want to work on their own cars and do their own hair? There is nothing wrong with the latter preferences. It is simply that they are just that—preferences—and, therefore, not a factor that demands the state's attention.

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[4]It is worth noting that because most states' basic grant formula already provides additional resources for schools with high concentrations of economically disadvantaged students, existing school finance systems may already concentrate funding on districts with larger vocational programs.

In reality, probably all three of these explanations are valid to some degree. That is, the variation among school districts in the amount of vocational education they provide reflects local preferences, demographic differences in the ages of students, and different degrees of "need" for workforce preparation in lieu of four-year college. Unfortunately, it is not possible to disentangle the relative influence of any one of these factors. For the present, the most we can know is that the provision of vocational education does vary among districts and, consequently, some districts will feel more pressure from finance reform than others. State legislators are the ones who will determine whether state policy should seek to remedy this particular fiscal impact. One additional piece of information that may aid the deliberations is an examination of how districts with above- and below-average levels of vocational education fare under the state funding system.

Using Data for Policymaking Purposes

To quantify the relative cost of providing vocational education, states may want to develop a set of annual district reporting procedures to track expenditures for vocational education programs, services, and other activities. Ideally, these data would be sufficient to provide state legislators with information about how the cost of vocational education compares with that of other types of education and how it varies across districts and vocational program areas. Data also could be used to compute vocational program cost factors that could be incorporated into a state's funding system. In light of the minimal cost differences among teacher salaries, the data elements most likely to show variation include district expenditures for purchasing and maintaining vocational equipment and supplies across program areas.

There can be a tradeoff, however, in complicating vocational funding formulas. Although adding numerous adjustments to the state vocational formulas could help control for the effects of a variety of factors, unnecessarily complicating the formula actually could reduce efficiency if locals are unable to collect accurate data for all elements. Ideally, states will configure their data collection system to allow for the calculation of the relative cost of vocational education reliably and defensibly in relation to other types of instruction, and to ensure that district calculations are sufficient to provide all students with access to an adequate level of vocational services.

SUMMARY

Evidence from national data sets and a review of states' finance policies suggest that the cost of providing vocational education can be higher than the cost of providing other forms of instruction. To supplement vocational funding, states have developed a number of different mechanisms for allocating state resources, with the majority employing some form of unit-based or weighted per-pupil formula. Since states have adopted a variety of approaches to fund vocational programs, not all of which are grounded on actual expenditures, it is difficult to calculate the true cost associated with vocational services. The national survey on state funding practices indicates that the relative cost of vocational education may be from 20 percent to 40 percent greater than that of academic instruction, and that this cost varies by program area and content level.

Existing state funding systems often operate on historical precedent, with funding strategies and amounts premised on preceding year allocations. In practice, annual vocational budgeting in most states is a data-driven exercise: local educators routinely submit summary counts of student participants and/or district cost data to state staffers, who aggregate data, often into complex spreadsheets, to produce district allocations that remain nearly constant over time.

There are often good reasons for maintaining stable district allocations. Since teacher salaries are a majority of local costs for vocational education, large, unanticipated changes in annual funding can jeopardize jobs and, by extension, the quality and type of vocational offerings. Other fixed costs, which include instructional supplies and building and equipment maintenance, also require relatively stable funding streams. Survey results suggest that states that have instituted reforms have generally done so only when coerced by legal mandate or legislative directive.

Before proceeding to institutionalize changes, it may be prudent for representatives of legislative and executive branches of state government to meet with state education administrators and agree upon the goals for vocational education. Specifically, what are the purposes of vocational education in a state? What types of vocational programs and instructional settings should be encouraged and to what extent? Is a state willing to fund traditional vocational programs tied to fields that may be low paying and relatively expensive to equip, or is the desire

to redirect instruction into other fields that may require less equipment and offer graduates higher-paying jobs? How much flexibility should local agencies have in allocating resources across programs? Is there a threshold level of funding that local agencies must exceed if they are to offer vocational programs, and if so, what is it?

States that have undertaken systematic reform of vocational funding have generally approached the exercise with considerable care. To ensure that resource shifts do not overly burden local agencies, states adopting new funding formulas have often allocated additional educational funding to offset any unanticipated consequences of the new formula or included funding "circuit-breakers," which cap annual changes in district funding to protect local agencies from large resource deviations. The need for consistency suggests that states that are contemplating such changes proceed at an equally careful, measured pace to ensure they do not unduly penalize local agencies with legislative mandates outside their control.

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APPENDIX—STATE FUNDING MATRICES

Matrix 1—State Funding Based on Student Participation

State	Total Funds Appropriated for Vocational Education (FY 2000–01 unless otherwise noted)	Funding per FTE Vocational and Academic Student	Eligible Vocational Schools	Financing VocEd
Arizona	$11,085,600 (FY 1998)		Comprehensive High Schools with State Approved Career-Tech/ Vocational Programs	$9,251,300 (90% allocated student count component, 10% placement component) was available for the FY 1998. Each vocational program is assigned a weight factor. This amounted to an allotment of $252.04 per student for a program with a weight of 1.0. An additional $1,834,300 was available to the state for administration costs.
California	$337,000,000	Voc: $1,369*	Regional Occupation Centers/Programs	Funding is distributed to 82 Regional Occupation Centers/Programs based on ADA with adjustments for center size and revenue limits. ROCPs are primarily state-funded organizations that work in collaboration with schools, districts, and support service agencies (e.g., Employment Development Department, Job Training Partnership Act, etc.) to provide technical education to high school and adult students.
Connecticut	$115,000,000		17 Vocational Technical High Schools	75% of funding is allocated based on student enrollment and number of programs, and 25% based on square footage compared to average among 17 Vocational Technical Schools.
Hawaii	$20,000 per secondary school + $2,000,000 allocated by FTE counts		Comprehensive High Schools with State Approved Career-Tech/ Vocational Programs	Each secondary school receives a base amount of $20,000 regardless of enrollment. The remaining $2,000,000 is allocated based on grades 9–12 FTE vocational student enrollment.
Maryland	$3,900,000		Comprehensive High Schools with State Approved Career-Tech/ Vocational Programs	Allocated based on FTE vocational enrollment at district level, and spending is locally controlled.

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Matrix 1—State Funding Based on Student Participation—Continued

State	Total Funds Appropriated for Vocational Education (FY 2000–01 unless otherwise noted)	Funding per FTE Vocational and Academic Student	Eligible Vocational Schools	Financing VocEd
Massachusets	Not Available	Voc: $8,549 Non-voc: $5,449	Comprehensive High Schools with State Approved Career-Tech/ Vocational Programs	Complex state formula considering at least 19 factors (salaries, benefits, professional development, equipment, supplies) are calculated for 12 different student categories, of which vocational education is one. Funding amounts are multiplied by a wage adjustment factor calculated for each district.
Minnesota	$2,225,000		Comprehensive High Schools with State Approved Career-Tech/ Vocational Programs	Per pupil aid is equivalent to the lesser of: (1) $73 multiplied by the number of Career Tech students in grades 10–12, or (2) 25% of instructional expenditures for salaries of vocational teachers, necessary instructor travel, curriculum development, supplies, and non-school district-contracted services. However, districts are guaranteed the lesser of 95% of the aid they received the previous year or 40% of the expenditures of the current year. Then, depending on which formula yields the greater product, school districts are entitled to the greater amount.
Montana	$715,000		Comprehensive High Schools with State Approved Career-Tech/ Vocational Programs	Funding is based on a per pupil allocation: the Average Number Belonging (ANB) for secondary vocational programs, and each program must report its ANB separately. Each program has a different factor, determined by the superintendent of public instruction, which is then multiplied by the state-aid available per ANB enrolled in the program. Vocational education students can be counted more than once across vocational programs.

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Matrix 1—State Funding Based on Student Participation—Continued

State	Total Funds Appropriated for Vocational Education (FY 2000–01 unless otherwise noted)	Funding per FTE Vocational and Academic Student	Eligible Vocational Schools	Financing VocEd
New York	$457,600,000		BOCES	Funding is allocated to area vocational schools called BOCES (Board of Cooperative Educational Services). Services aid in the amount of $376.4 million allocated based on the greater amount between (1) a millage ratio based on district tax rate, or (2) an aid ratio based on the number of students participating in BOCES. Plus $49.9 million in additional funding for administration and facilities.
North Carolina	$15,274,205	Voc: (after LEA base) $25.95	Comprehensive High Schools and Area Technical Schools	Each LEA is eligible for a base amount of $10,000. Remaining funds are distributed based on allotted ADM in grades 7–12. The per pupil amount is not a set value; it is determined by the balance of remaining funds.
Rhode Island		Voc: $500	Career Tech Centers	Awarded for each student enrolled in a local career and technical center.
Utah	$38,881,153		Comprehensive High Schools with State Approved Career-Tech/ Vocational Programs & ATCs/ATCSRs	All districts receive $2,006 per FTE student. In addition, districts are eligible for additional funding for vocational education programs. These funds are allocated based on performance measures, skill certification performance, participation in leadership organizations, and participation in summer agricultural programs. Districts must allocate these funds directly to the program that generated the extra funding. The state's five Applied Technology Centers (ATCs) and three Applied Technology Center Service Regions (ATCSRs) are funded as separate line items in the budget.

Matrix 1—State Funding Based on Student Participation—Continued

State	Total Funds Appropriated for Vocational Education (FY 2000–01 unless otherwise noted)	Funding per FTE Vocational and Academic Student	Eligible Vocational Schools	Financing VocEd
Vermont	$2,254,628 (FY 1998)		Regional Technical Center	Each technical center shall receive a grant per pupil. This grant is calculated by taking the total funds available (In FY 1998 that was $2,254,628), and dividing that by the total number of FTE students enrolled in all regional technical centers. There are also reimbursements available for exploratory course costs, transportation ($1.50 per mile traveled), equipment replacement, salary assistance, overhead costs, and incentive grants.
Washington	$23,306,498 (FY 1999–2000)	Voc: $4,316 Non-voc: $3,653	Comprehensive High Schools with State Approved Career-Tech/ Vocational Programs	A staffing enhancement is awarded if districts can demonstrate a ratio of 1:19.5 or less, and spend no more than 10% of vocational expenditures on indirect costs (e.g., repayment of debts, Principal's office costs, guidance and counseling, health services, pupil management and safety, utilities, facilities management). The average vocational enhancement in 1997–98 was $663.40, where as the average expenditures per student above and beyond basic education was $758.
West Virginia	$2,146,000		LEA	Funding is allocated to LEAs based on a FTE membership calculation. This is in addition to the general $6,806.27 state appropriation per student.

*Based on FY 2000–01 data and 1997–98 ROCP enrollment data

NOTE: Funding amounts are based on information supplied by state representatives and/or review of state legislative documents. Dollar amounts may not include all vocational expenditures within a state, and as such, should be viewed as estimates of overall state spending.

Matrix 2—State Funding Based on Instructional Units

State	Teacher: Student Ratio for Vocational ADM Counts	Financing VocEd
Alabama	1:18	Foundation program units are based on teacher units, with one instructor unit funded per 18 pupils in grades 9–12. Grade divisors for vocational students include an adjustment to reflect increased programmatic costs. The adjustment for vocational education reflects an added 16.5% to the overall ADM, and then vocational pupils ADM is weighted 2.0 in grades 9–12; meaning that vocational enrollments are inflated (voc ADM x 1.165 x 2.0) prior to dividing by the foundation instructional unit (18). Principals in Area Vocational Centers shall be funded at an additional .33 weight for high schools and Area Vocational Schools alike. Units are then converted to dollar amounts using a state salary matrix.
Delaware	1:20 plus (27,000 pupil minutes/week x 0.5)	Vocational education is funded in three ways. First, there is funding for material which is determined by the vocational program (80% of which must be reallocated locally to vocational education). Other funding is provided to pay for teacher salaries, and to equalize teachers' salaries. Both of these adjustments are calculated in the same way. The 1:20 instructional unit (the same for non-vocational pupils) is inflated. Additional instructional units are calculated per 27,000 pupil minutes/week (or major fraction of), multiplied by 0.5, and then added to the non-vocational equivalent instructional units. For example, for 100 vocational students, a base of 5 instructional units are calculated. Then, an additional 2 units (= 54,000 pupil minutes/week) are multiplied by 0.5 and added to the original 5 units, totaling 6 instructional units.
Kentucky	Actual Teacher Count	Funds allocated on a per teacher basis: 1–5 teachers=$21,000 per teacher, 6–9 teachers=$16,000 per teacher, and 10 or more=$10,000 per teacher. These funds are not necessarily for teachers' salaries.
Mississippi	1.5:27	The state allocates funds based on average daily attendance per teacher unit. A teacher unit is equal to 1 teacher per 27 students ADA. An additional 1/2 teacher unit is added for each approved vocational program. Districts are allotted $15,000 plus $50 for each teacher unit in excess of 50 units with a cap of $25,000.
Tennessee	1:20	Using average daily attendance, the state funds salaries for one non-vocational teacher per 26 non-vocational, and one vocational teacher per 20 vocational students. Also, student supplies and equipment are funded differently. Supplies and equipment are funded at $27 and $20 per non-vocational student, and $101 and $62 per vocational student, respectively. School districts have local control over how the funds are spent.
Virginia	1:15 to 1:21	Funding teacher units: each program has to establish teacher/student ratio ranging from 1:15 to 1:21. Teacher salaries are funded depending on ADM, and adjustments are made for cost of living and benefits (FY 2002 base $37,362/yr + 15% benefits + 10% added cost of living). Virginia also has a cost reimbursement element to their funding where school districts can be reimbursed for the cost of equipment, regional program staffing, and other indirect costs. Incentive-based program funds are also awarded targeting mostly at-risk youth.

Matrix 3—State Funding Based on Cost Reimbursement

State	Total Funds Appropriated for Vocational Education (FY 2000–01 unless otherwise noted)	Eligible Costs	Financing VocEd
Colorado	$17,800,000	Instructional Personnel, Supplies, Equipment, and Instructional Services provided by Cooperating Agencies or Institutions	Added Cost Basis: If vocational education costs exceed per-pupil funding, state will cover 80% of the first $1,250 above per pupil cost, and 50% thereafter. Per-pupil funding = $5,175.
Idaho	$5,591,440	Equipment, Materials and Supplies, Extended Contracts, Professional Development, Instructor Reimbursement, Miscellaneous Contractual Costs	Funding is allocated based on an added cost formula, but each program area has a funding cap. For example, Machining Technologist programs are capped at $15,390 per unit and Marketing Education is capped at $5,130 per unit. Professional Technical schools are eligible for both the program funds, and additional aid calculated at an added 0.30 ADA.
Iowa	$3,800,000	Teacher Salary, Benefits, and Travel	Secondary districts submit reimbursement claims reports detailing their expenses, enrollment, and completion rates. Then, funds are allocated proportionately based on actual expenditures. In FY 2000–01, it is estimated that 7.6% of actual vocational costs will be reimbursed by the state.
Maine	Not available	All Actual Costs	All vocational costs not covered by the state foundation formula are reimbursed on a 2-year lag cycle. Program cost reimbursement is calculated based on a formula controlling for district valuation and student enrollment, and is limited by funds available.
Michigan	$31,027,600 (FY 1999–2000)	Counseling, Curriculum Development, Technology and Equipment, Supplies and Materials, Work-Based Learning Expenses, Evaluation, Career Placement Services, Student Leadership Organizations, and up to 10% for Planning and Coordination	Added Cost Basis: If vocational education costs exceed per pupil funding, state will reimburse up to 75% of the added cost.

Matrix 3—State Funding Based on Cost Reimbursement—Continued

State	Total Funds Appropriated for Vocational Education (FY 2000–01 unless otherwise noted)	Eligible Costs	Financing VocEd
North Dakota	Not available	Salaries, Extended Contracts, Travel, Area Voc. Tech. Centers (all costs approved)	26% reimbursement on instructional salaries and extended contracts, 31% reimbursement on approved travel, 39% of all approved costs at Area Vocational and Technology Centers. No reimbursement on equipment.
Oklahoma	$125,023,744	For Comprehensive High Schools: Program Specific Costs and Teacher Salaries. For Technology Centers: Direct Instruction Costs per Approved Program, Indirect Costs, and Transportation	In comprehensive high schools vocational teachers are funded at $200 per contract per month to pay for professional development, reporting, and student organizations. In addition, program assistance grants are distributed at $560 to $8,280 per program depending on the program. This money is intended to cover the cost of equipment, supplies, and staff development. Technology centers are funded separately from comprehensive high school programs at an estimated annual cost of $118,359 per FTE program.
Pennsylvania	Vocational Education $53,069,000 Vocational Equipment $10,000,000	Instructional (Salaries, Benefits, and Materials), Pupil Personnel Services (Counseling), Staff Support Services (including Staff and Curriculum Development), Audit Costs, Child Care, 6% Operational Cost	Local education agencies apply for reimbursement on eligible expenses in six functions: Instruction; Pupil Personnel Services; State Support Services; Business Support Services; Community Services; and Other Financing Uses.

NOTE: Funding amounts are based on information supplied by state representatives and/or review of state legislative documents. Dollar amounts may not include all vocational expenditures within a state, and as such, should be viewed as estimates of overall state spending.

Matrix 4—State Funding Based on Student Weights

State	Base Per 1.0 Weight Allocation (FY 2000–01)	Weight or Added Weight Factor per Vocational FTE & Unadjusted $/FTE	Formula Allocations for Vocational Students
Alaska	$3,940	Weight = 1.20 Unadjusted = $4,728	**Formula:** ADM vocational x district cost factor x 1.20 x $3,940 **Adjustment:** ADM is adjusted for school size; local contribution based on tax levy.
Florida	$3,417	Weight = 1.211 Unadjusted = $4,138	**Formula:** FTE x adjustment factor x 1.211 x $3,417 **Adjustment:** FTE is adjusted for District Cost Differentials, sparcity indices, hold harmless, and a number of other factors.
Georgia	$2,243	Weight = 1.2018 Unadjusted= $2,696	**Formula:** vocational FTE x 1.2018 x $2,243 **Adjustment:** Teacher experience and training. Funding is intended to pay at least the beginning salaries of all teachers needed to provide essential classroom instruction.
Illinois	$4,425	Add-on = 0.30 to 0.50 Unadjusted= $5,753 to $6,638	**Formula:** (FTE vocational + (FTE vocational x add-on weights)) x $4,425 **Adjustments:** Available local resources: an added weight of 0.3 per credit is allowed for shared courses/course instructors, double periods, and a corporate campus. A weight of 0.5 is added for state designated facilities and administrative support.
Indiana	$4,267	Add-on= 0.38 Agriculture (1/2 day) 0.33 Distributive Ed 0.14 Consumer Homemaking 0.33 Occupational Home EC. 0.33 Business Ed 0.48 Trade and Industry 1/2 day 0.33 Trade/Industry (2 periods) 0.28 Cooperative Education	**Formula:** (FTE vocational + (FTE vocational x add-on weights)) x $4,267 **Adjustments:** At-risk index; state monetary adjustment based on intermediate step funding level.
Kansas	$3,820	Add-on = 0.50 Unadjusted= $5,730	**Formula:** adjusted district enrollment weight + (vocational FTE x 0.50) x $3,820 **Adjustments:** Low enrollment weight, transportation weight, at-risk pupils weight, school facilities weight, ancillary school facilities weight.
Louisiana	$3,020	Add-on = 0.05 Unadjusted= $3,171	**Formula:** (1.0 + (.05 x vocational units)) x local equalization factor x $3,020 **Adjustments:** State pays 65% of local eligibility
Ohio	$4,294	Add-on = 0.60 for regular programs Unadjusted= $6,870	**Formula:** CODBF x ADM x state percent share x .6 x $4,294 **Adjustments:** Local effort; Cost of Doing Business Factor (CODBF)

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Matrix 4—State Funding Based on Student Weights—Continued

State	Base Per 1.0 Weight Allocation (FY 2000–01)	Weight or Added Weight Factor per Vocational FTE & Unadjusted $/FTE	Formula Allocations for Vocational Students
South Carolina	$2,012	Weight = 1.29 Unadjusted= $2,595	**Formula:** FTE vocational x 1.29 x $2,012 **Adjustment:** Index of tax-paying ability to determine local share. State pays 70% of foundation program. Academic courses weighted 1.25.
Texas	$2,537	Weight = 1.37 Unadjusted= $3,476	**Formula:** FTE vocational x 1.37 x $2,537 adjusted for local characteristics **Adjustments:** Cost of Education; Small and Mid-Sized Districts; Sparsity; Adjusted property value for districts not offering all grade levels.

Matrix 5—State Funding Based on Performance Incentives

State	Resource Allocations	Description of State Formula
Indiana	$550 per pupil for Certificates of Achievement $1,000 per pupil for more than moderate demand program $700 per pupil for moderate demand program $300 per pupil for less than moderate demand program $230 per pupil for all other programs	Beginning in the 2002–03 school year, local agencies will receive funding per pupil based on the number of students who receive certificates of achievement or who are enrolled in programs that address identified areas of labor market need. The total grant allocation will equal the sum of the products of each per-pupil allocation formula.
Missouri	**Base Allocation:** Area Vocational schools: based on teacher salaries Comprehensive HS: $300/contract month/full-time vocational teacher or $35/class period/teacher **Incentive Funding:** Effectiveness Index & Incentive Funding **Equipment Reimbursement:** Enhancement Grant and Annual Funding	The effectiveness index (EI) scores the relative success of a program in placing students in jobs as well as the responsiveness of a program to labor supply and demand factors. Based on funds available, the state calculates a maximum allotment per contact hour (or hour of class time) per program. Then, to calculate the actual allocation per program, the program's EI score is essentially multiplied by the dollars per contact hour allotted to equal an incentive grant. The incentive formula allows for an additional 10% incentive to schools enrolling students in target groups (disadvantaged, disabled, and nontraditional students). State funding is also available for equipment reimbursement at 75% for enhancement grants and 50% for annual costs, with both levels of funding contingent on the amount of state-appropriated funds for each category.

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